IN THE CLAIMS

This is a complete and current listing of the claims, marked with status identifiers in parentheses. The following listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A computer tomograph, ~~having~~comprising:

~~—~~a radiation source ~~(41)~~ for emission of X-ray radiation ~~(40)~~ with a predetermined intensity and a predetermined spectrum;

~~—~~a detector unit ~~(2), which comprises~~, including a ~~large number~~plurality ~~—~~of detectors ~~(1)~~, for verification of X-ray radiation ~~(40)~~, ~~with the~~wherein individual detectors ~~(1)~~ ~~in~~of the detector unit ~~(2) being~~ are designed to receive incident X-ray quanta in the X-ray radiation ~~(40)~~ and to detect the number of X-ray quanta in the received X-ray radiation ~~(40)~~ whose quantum energy exceeds a predetermined threshold value;

~~—~~a transmission device ~~(43)~~ for transmission of the information detected by the detectors ~~(1)~~ in the detector unit ~~(2)~~ to an evaluation device ~~(44)~~; and

~~—~~an evaluation device ~~(44) which is~~, designed to calculate a measurement result from a measurement object ~~(42)~~ through which the X-ray radiation ~~(40)~~ has passed on the basis of the information detected by the detectors ~~(1)~~ in the detector unit ~~(2),~~

~~characterized~~

~~in that~~, wherein the individual detectors ~~(1)~~ in the detector unit ~~(2)~~ are designed to detect both the intensity and the quantum energy of the individual X-ray quanta in the received X-ray radiation ~~(40)~~, and, for each measurement period, to emit a spectrum which, in addition to information about the number of X-ray quanta of medium quantum energy received in each measurement period, and hence the intensity, also

contains information about the respective quantum energy in the X-ray quanta, and thus the spectrum of the received X-ray radiation; and ~~in that~~ wherein the evaluation device ~~(44)~~ is also designed to calculate the measurement result from the measurement object ~~(42)~~ on the basis of the information detected by the detectors ~~(1)~~ relating to the intensity and quantum energy of the individual X-ray quanta in the received X-ray radiation ~~(40)~~, taking into account the intensity and the spectrum of the X-ray radiation ~~(40)~~ emitted from the radiation source ~~(41)~~.

2. (Currently Amended) The computer tomograph as claimed in claim 1,
~~characterized~~
~~in that~~ wherein the detectors ~~(1)~~ in the detector unit ~~(2) have~~ include a ~~large number~~plurality ~~(131, 132, 133)~~ of parallel-connected comparators, each having a threshold value, and
~~in that~~wherein each comparator ~~(131, 132, 133) has~~includes an associated counter ~~(151, 152, 153)~~, and wherein the comparators ~~(131, 132, 133)~~ are designed to increment the respectively associated counter ~~(151, 152, 153)~~ by one unit when the quantum energy of an X-ray quantum in the received X-ray radiation ~~(40)~~ exceeds the threshold value of the respective comparator ~~(131, 132, 133)~~.

3. (Currently Amended) The computer tomograph as claimed in claim 2,
~~characterized~~
~~in that~~ wherein the threshold values of the comparators ~~(131, 132, 133)~~ are freely variable.

4. (Currently Amended) The computer tomograph as claimed in claim 2 ~~or 3~~, wherein
~~characterized~~
~~in that~~ the detectors ~~(1)~~ in the detector unit include a plurality ~~(2) have a large number~~ of pulse logic devices ~~(141,~~

~~142, 143)~~, ~~with~~ wherein one pulse logic device ~~(141, 142, 143) in each case being~~is connected downstream from the respective comparators ~~(131, 132, 133)~~ and upstream of the respective counters ~~(151, 152, 153)~~, and wherein the pulse logic devices ~~(141, 142, 143) providing~~provide time normalization of the output signals from the comparators ~~(131, 132, 133)~~.

5. (Currently Amended) The computer tomograph as claimed in ~~one of the preceding claims,~~
~~characterized~~
~~in that~~claim 1, wherein the detectors ~~(1)~~ in the detector unit ~~(2) have~~include a receiving area ~~(3)~~ for the X-ray radiation ~~(40)~~, the ~~which~~ receiving area being ~~(3) is~~ formed from at least one of gadoliniumoxysulfide ceramic, bismuth germanium oxide ~~or~~ and lutetium oxyorthosilicate.

6. (Currently Amended) The computer tomograph as claimed in ~~one of~~ claim~~s~~ 1 ~~to 4~~, wherein
~~characterized~~
~~in that~~ the detectors ~~(1)~~ in the detector unit include ~~(2) have~~ a direct-conversion receiving area ~~(3)~~ for the X-ray radiation ~~(40)~~,
~~which~~ the receiving area ~~(3) is~~being formed from at least one of cadmium zinc telluride ~~or~~ and cadmium telluride.

7. (Currently Amended) A method for verification of X-ray radiation by ~~means~~ way of a computer tomograph which has a detector unit ~~(2) comprising a large number~~including a plurality of detectors ~~(1)~~, ~~having the following steps~~the method comprising:
- detect~~ion of the~~ing a number of X-ray quanta whose quantum energy exceeds a predetermined threshold value of the X-ray radiation ~~(40)~~ received, using ~~by means of~~ the individual detectors ~~(1)~~ in the detector unit ~~(2)~~;
- transmi~~ssion of~~tting the information detected ~~by means of the detectors (1) in the detector unit (2) to an evaluation device (44)~~; and

– calculat~~ion of~~ing a measurement result ~~from~~ from a measurement object ~~(42)~~ through which the X-ray radiation ~~(40)~~ has passed, ~~by means of the evaluation device (44)~~ on the basis of the information detected by the detectors, wherein ~~(1) in the detector unit (2),~~

~~characterized~~

~~in that~~ both the intensity and the quantum energy of the individual X-ray quanta in the X-ray radiation ~~(40)~~ received by ~~means of~~ the individual detectors ~~(1)~~ in the detector unit is detected,

~~in that~~wherein the individual detectors ~~(1)~~ in the detector unit ~~(2)~~ emit, for each measurement period, a spectrum which, in addition to information about the number of X-ray quanta of medium quantum energy received in each measurement period, and hence the intensity, also contains information about the respective quantum energy of the X-ray quanta, and thus the spectrum of the received X-ray radiation, and wherein

~~in that~~ the measurement result from the measurement object ~~(42)~~ is calculated ~~by means of the evaluation device (44)~~ on the basis of the information detected by the detectors ~~(1)~~ relating to the intensity and quantum energy of the individual X-ray quanta in the received X-ray radiation ~~(40)~~, taking into account the intensity and the spectrum of the X-ray radiation ~~(40)~~ emitted from a radiation source ~~(41)~~.

8. (Currently Amended) The method for verification of radiation as claimed in claim 7,

~~characterized~~

~~in that~~ wherein the detection of the X-ray quanta which are received by ~~means~~ way of the detector ~~(1)~~ in the detector unit ~~(2)~~ comprises ~~the following steps~~:

– ~~detection~~ detecting~~of~~ a signal, ~~which is~~ produced in the detector ~~(1)~~, as a consequence of a received X-ray quantum, whose signal level
is proportional to the quantum energy in the received X-ray quantum;

- ~~———~~ compar~~ison of~~ing the signal level with a large number of predetermined threshold values; and
- ~~———~~ increment~~ation of~~ing a counter ~~(151, 152, 153)~~, which is in each case associated with one range between two adjacent threshold values, by one unit when the signal level of the signal is in the range between the two adjacent threshold values.

9. (Currently Amended) The method for verification of radiation as claimed in claim 7,
~~characterized~~
~~in that~~ wherein the detection of the X-ray quanta which are received by ~~means~~ use of the detector ~~(1)~~ in the detector unit ~~(4)~~ comprises ~~the following steps~~:

- ~~———~~ detect~~ion of~~ing a signal which is produced in the detector ~~(1)~~ as a consequence of a received X-ray quantum, whose signal level is proportional to the quantum energy in the received X-ray quantum;
- ~~———~~ compar~~ison of~~ing the signal level with a large number of predetermined threshold values; and
- ~~———~~ increment~~ation of~~ing counters ~~(151, 152, 153)~~, which are each associated with one threshold value, by one unit when the signal level of the signal exceeds the respective threshold value.

10. (Currently Amended) The method for verification of radiation as claimed in claim 8 ~~or 9~~, wherein
~~characterized~~
~~in that~~ a signal, which is produced in the detector ~~(1)~~ as a consequence of a received X-ray quantum, is rejected if the determined signal level of the signal is lower than a lowest threshold value.

11. (Currently Amended) The method for verification of radiation as claimed in claim 8, ~~9 or 10,~~
~~characterized~~
~~in tha~~wherein~~t~~ the threshold values are freely variable.

12. (Cancelled).

13. (Cancelled).

14. (New) The computer tomograph as claimed in claim 3, wherein the detectors in the detector unit include a plurality of pulse logic devices, wherein one pulse logic device is connected downstream from the respective comparators and upstream of the respective counters, and wherein the pulse logic devices provide time normalization of the output signals from the comparators.

15. (New) The computer tomograph as claimed in claim 2, wherein the detectors in the detector unit include a receiving area for the X-ray radiation, the receiving area being formed from at least one of gadoliniumoxysulfide ceramic, bismuth germanium oxide and lutetium oxyorthosilicate.

16. (New) The computer tomograph as claimed in claim 2, wherein the detectors in the detector unit include a direct-conversion receiving area for the X-ray radiation, the receiving area being formed from at least one of cadmium zinc telluride and cadmium telluride.

17. (New) The method for verification of radiation as claimed in claim 9, wherein a signal, which is produced in the detector as a consequence of a received X-ray quantum, is rejected if the determined signal level of the signal is lower than a lowest threshold value.

18. (New) The method for verification of radiation as claimed in claim 9, wherein the threshold values are freely variable.

19. (New) The method for verification of radiation as claimed in claim 10, wherein the threshold values are freely variable.

20. (New) The method for verification of radiation as claimed in claim 17, wherein the threshold values are freely variable.

21. (New) An apparatus for verification of X-ray radiation using a computer tomograph, comprising:

means, including a plurality of individual detectors, for detecting a number of X-ray quanta whose quantum energy exceeds a predetermined threshold value of the X-ray radiation received;

means for transmitting the information detected; and

means for calculating a measurement result from a measurement object through which the X-ray radiation has passed, on the basis of the information detected, wherein both the intensity and the quantum energy of the individual X-ray quanta in the X-ray radiation received by the individual detectors is detected, wherein the individual detectors emit, for each measurement period, a spectrum which, in addition to information about the number of X-ray quanta of medium quantum energy received in each measurement period, and hence the intensity, also contains information about the respective quantum energy of the X-ray quanta, and thus the spectrum of the received X-ray radiation, and wherein the measurement result from the measurement object is calculated on the basis of the information detected by the detectors relating to the intensity and quantum energy of the individual X-ray quanta in the received X-ray radiation, taking into account the intensity and the spectrum of the X-ray radiation emitted from a radiation source.